CORRELATION EFFECTS IN THE DELAYED FEEDBACK CONTROL ALGORITHM FOR THE ELECTRONIC BOUNCING BALL, Jacob R. Hutchcraft and Brian K. Clark*, Department of Physics, Campus Box 4560, Illinois State University, Normal, IL 61790-4560, bkc@phy.ilstu.edu.

The electronic bouncing ball is a prototypical chaotic impact oscillator that can be controlled using adaptive delayed feedback control (ADFC). A control variable, α, produced as part of the ADFC shows long term correlation and appears to be chaotic. We analyze the trajectory of α by determining the Lyapunov exponent and correlation dimension via Procaccia Grassberger method to uncover the dynamics of the ADFC.